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ABSTRACT

The Stanford-Binet Intelligence Scale-Revised and the Kaufman Assessment Battery for Children (K-ABC) were compared using a sample of 26 developmentally disabled children, aged 32 to 73 months. The focus of the study was to determine the feasibility of the K-ABC both for assessment and for planning more effective remediation programs for this group of children. Results revealed that the Stanford-Binet scores were significantly lower than the K-ABC Mental Processing Composite, which is tentatively attributed to the Binet's verbal nature. It is suggested that the K-ABC Mental Processing Scales and the Achievement Scale appear to measure abilities that may not be tapped by the Binet with its high verbal content. It is concluded that the K-ABC could be useful in assessing processing strengths for the developmentally disabled preschool child and could possibly reveal the development and nature of cognitive processing styles if used in a longitudinal design. (Author/JDD)

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COMPARISON OF KAUFMAN ASSESSMENT BATTERY FOR CHILDREN AND STANFORD-BINET WITH CHILDREN HAVING DEVELOPMENTAL DISABILITIES

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Running head: K-ABC AND STANFORD-BINET

ABSTRACT

The Stanford-Binet, traditional measure of intelligence, and the Kaufman Assessment Battery for Children (K-ABC), a relatively new measure of intelligence utilizing theories in clinical neuropsychology, were compared using a sample of 26 developmentally disabled children (mean age = 50.1 months). The focus of the study was to determine the feasibility of the K-ABC both for assessment and for planning more effective remediation programs for this group of children. Results revealed that the Stanford-Binet (59.8) was significantly lower , $p < .01$, than the K-ABC Mental Processing Composite (71.4). The Stanford-Binet correlated highly with the K-ABC Scales indicating some redundancy in the global measures. The implications are that the K-ABC could be useful in assessing processing strengths for the developmentally disabled preschool child and could possibly reveal the development and nature of cognitive processing styles ("Simultaneous and Sequential Processing") if used in a longitudinal design.

COMPARISON OF KAUFMAN ASSESSMENT BATTERY FOR CHILDREN AND STANFORD-BINET WITH CHILDREN HAVING DEVELOPMENTAL DISABILITIES

Introduction

There is a special challenge in the evaluation of young children with developmental handicaps. Measures for the cognitive assessment of young children are available, but one reviewer (Kaufman, 1978) of preschool scales has indicated that the Wechsler Preschool and Primary Scale of Intelligence (WPPSI; Wechsler, 1967), the McCarthy Scales of Children's Abilities (MSCA, McCarthy, 1972), and Binet (Terman and Merrill, 1973, all use many basic concepts that many five-year-old, middle-class children would not understand. The addition of handicapping conditions places further limitation upon the selection. The testing of any preschool child poses a special challenge--their lively curiosity about everything, test connected or not, their sometimes brief attention span (as compared to older children), their delight in exploring the physical limits of the testing situation, and finally the ever present problem of the examiner distinguishing between "can't" and "won't". For the developmentally handicapped youngster the problems of language dysfunction, sensory impairment, physical incapacity and medication induced lethargy complicate the testing situation.

The Kaufman Assessment Battery for Children (K-ABC; Kaufman and Kaufman, 1983a) offers some attractive features for assessment of the young developmentally disabled population. Items are presented visually in a colorful format that appears to be intrinsically interesting to children. The variety and novelty of the subtests are designed to capture and maintain the attention of the child. Ease of presentation enables the examiner to focus attention on the child and facilitates maintenance of rapport as well as observation of behavior. The role of language is minimized and nonverbal norms are included. The built-in flexibility of the concept of teaching is a particular advantage to the preschooler and to exceptional children who may have difficulty in comprehending directions. Unlike many individually administered tests of intellectual ability, the K-ABC norms include children identified as mentally retarded, learning disabled, and gifted. Additionally, because the processing scales assess process rather than content, they should lead to more effective remedial plans in contrast to other measures.

The aim of the present research was to compare the 1972 Stanford-Binet (S-B) and the K-ABC for a sample of young developmentally disabled children (mean age = 50.1 months). Specifically the objectives of this investigation were to (a) assess the resulting differences in mental ability scores from the use of the two measures; (b) evaluate the relationships among the

Binet and K-ABC Scales and varied subtests; and (c) to formulate some conclusions as to the appropriateness of the K-ABC for this sample of children, in terms of its usefulness in delineating the type of intervention needed.

Method

Instruments

Stanford-Binet (Form L-M)

The Stanford-Binet Intelligence Scale-Revised (1960) is an individually administered measure of intelligence which yields only one global measure (IQ) with a mean set at 100 and a standard deviation of 16. In 1973, a restandardization became available with new norms but with no change in the test items. The age range is from two years through adulthood. For further information consult Terman and Merrill (1973).

At the outset of the present research, the Stanford-Binet Intelligence Scale: Fourth Edition had not been published, but is now available (Thorndike, Hagen, and Sattler, 1986). The 1972 Stanford-Binet was thus, the current and preferred available form.

Kaufman Assessment Battery for Children (K-ABC)

The Kaufman Assessment Battery for Children (K-ABC) is an individually administered measure of intelligence and achievement organized into two major scales, a Mental Processing Scale (10 subtests) which is further subdivided into "Simultaneous" (ability of child to organize input simultaneously to solve problems) and

"Sequential" (arrangement of stimuli in a sequential or serial order for problem solving) processing scales, and an Achievement Scale (6 subtests). The K-ABC yields standard scores for each scale with a mean of 100 and a standard deviation of 15; the Mental Processing subtests are set at a mean of 10 and a standard deviation of 3. The total test is composed of 16 subtests, of which a maximum of 13 are administered to any age group. It is used with children from 2 1/2 to 12 1/2 years of age. For a more complete discussion of the K-ABC, see Kaufman and Kaufman (1983b).

Subjects

The subjects consisted of 25 children who ranged in age from 32 to 73 months (mean age = 50.1 months, standard deviation [S.D.] = 10.5). Each child was previously identified as developmentally disabled by a pediatrician and attended the Developmental Center of the Ozarks on a full-time basis. The subjects in this sample evidenced a variety of cerebral complications and lived primarily in urban settings and were heterogeneous with respect to social class and parent education.

RESULTS

Global Comparisons

The means and standard deviations on the K-ABC and Stanford-Binet are presented in Table 1. The measures of intellectual ability yield different results. The K-ABC Mental Processing Composite of 71.36 was significantly higher than the

Binet Global IQ of 59.80 (t = 5.06, p <.01). According to the Binet an IQ falling into the range of 52 to 67 points is classified as mentally retarded (1972, p. 18). Thus, for this sample, the K-ABC did not place as many children within the retarded range as the Binet. This differential finding with the K-ABC and Binet global scores is similar to a study comparing the Stanford-Binet (S-B) and K-ABC reported by Obrzut, A; Nelson, R.B., and Obrzut, J.E. (1987) which indicated that the S-B yielded a lower Global Scale IQ than did the K-ABC Mental Processing Composite. Additionally the Binet IQ was lower than both the K-ABC Sequential scale (t = 6.81, p <.0) and the Simultaneous scale (t = 4.47, p <.01). Examination of the mean scores between the K-ABC processing scales and the K-ABC MPC indicated that the Sequential scale score was higher than the K-ABC MPC (t = 6.57, p <.01) and that the Sequential Scale was higher than the Simultaneous scale (t = 2.15, p <.05).

Insert Table 1 about here

A comparison of the mean performance on the K-ABC Achievement Scale with the Binet IQ did not reveal the expected pattern of consistent scores across these scales. The K-ABC Achievement Scale mean of 74.04 was significantly higher than the Binet IQ mean of 59.80 (t = 5.3, p <.01). Children in the IQ classification of

mentally retarded, as determined by the Binet, would be expected to demonstrate achievement scores similar to their global IQ scores (Bolen, L.M., Childress, J.S., Durhan, T.W., and Benton, J.W., 1983; Nagliere, 1985, Obrzut and Obrzut, 1983). Thus, for this sample of children the Achievement Scale shows a stronger relationship to the K-ABC composite score than to the Binet Global IQ. There was no significant difference between the K-ABC Mental Composite of 71.36 and the K-ABC Achivement score of 74.04.

Binet, K-ABC Mental Processing, and Achivement Correlations

Examination of the correlation coefficients in Table 2 reveals that the correlations of the K-ABC Sequential Processing, Simultaneous Processing, Achievement and Mental Processing Composite (MPC) global scales with the Stanford-Binet global IQ were .76, .68, .83, and .73, respectively (all significant at the $p < .01$ level). The MPC also showed high relationships with the Simultaneous Processing Scale ($r = .68$, $p < .01$) and Sequential Processing Scale ($r = .76$, $p < .01$), which is to be expected because the combination of these two scales make up the MPC. The Simultaneous and Sequential scores were also highly related ($r = .73$, $p < .01$) which indicated that independence for the Sequential and Simultaneous scales does not appear evident for this sample.

Insert Table 2 about here

Binet and K-ABC Global Scores and Subtest Intercorrelations

Table 3 presents selected correlations among the global scores of the K-ABC, the K-ABC subtests, and the Binet IQ. Upon examination of the Table, the Simultaneous and Sequential Scales correlated about equally with each of the Achievement subtests (Expressive Vocabulary, .75 and .85; Faces and Places, .44 and .61; Arithmetic, .55 and .66; Reading Decoding, .32 and .44 with Simultaneous and Sequential, respectively) which suggested that the sample utilized both styles of processing when working with the Achievement subtests. Similarly, the Binet IQ correlated about equally with the K-ABC Achievement subtests (Expressive Vocabulary .80; Faces and Places .67; Arithmetic .59; and Reading Decoding .54) again indicating that either a Simultaneous or Sequential processing style is utilized with these subtests. These relationships are similar to a study done by Naglieri (1985) in which the WISC-R and the K-ABC were compared with a sample of mentally retarded children.

Insert Table 3 about here

Further evaluation of Table 3 indicated that the K-ABC subtests of Magic Window, Gestalt Closure, and Faces and Places (all simultaneous tasks) were highly related to all the global measures of the K-ABC as well as to the Binet IQ. Also, the

subtests of Gestalt Closure and Magic Window yielded more significant intercorrelations among the subtests than any of the other subtests. The lowest correlations were between Triangles and Faces and Places (r = .08) and Triangles and Hand Movements (r = .02).

Discussion

The K-ABC yielded significantly higher global scores than the Binet which suggests that these two measures are not directly comparable to each other, although they are correlated to a high degree. The results suggest that the K-ABC Mental Processing Scales and the Achievement Scale appear to measure abilities that may not be tapped by the Binet due to its high verbal content. The verbal nature of the Binet may explain much of the discrepancy between the Binet and K-ABC differences. Whatever the reasons for the Binet/K-ABC differences, these findings indicate that the K-ABC is a useful supplement to the Binet for this group of children. Additionally, since intervention is a prime consideration with these children, the K-ABC with its teaching quidelines directed toward the use of learning strengths, is a particular asset.

The similarity in correlations of the K-ABC Mental Processing Scales with each of the K-ABC Achievement suntests suggests that the sample used both styles of processing when solving the Achievement subtests and perhaps employed less language. Berlyne (1970) has indicated that limitations in the use of verbal

mediation techniques may contribute to less separation between the Sequential and Simultaneous Processing Scales. The implications are that the K-ABC could reveal, over time, the development of cognitive processing styles in the developmentally disabled child as well as indicating the pattern of cerebral organization.

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TABLE 1

Standard Score Means and Standard Deviations of the K-ABC Test Scale Scores and the Stanford-Binet IQ Scores (N=25)

Variables	$\bar{x}$	SD
Stanford-Binet IQ	59.80	19.76
K-ABC Mental Processing Composite	71.36	13.45
K-ABC Sequential Processing	77.32	14.96
K-ABC Simultaneous Processing	72.88	12.27
K-ABC Achievement	74.04	13.06

TABLE 2

Intercorrelations of K-ABC and Stanford-Binet

Variable	2	3	4	5
Stanford-Binet				
(1) Global IQ	.76*	.68*	.83*	.73*
K-ABC				
(2) Sequential Scale		.73*	.95*	.76*
(3) Simultaneous Scale			.87*	.68*
(4) Mental Processing Composite				.79*

*$p < .01$

TABLE 3

Selected Correlation Coefficients Among the Global Scores of the K-ABC and Binet and K-ABC Subtests

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Stanford-Binet															
1. Stanford-Binet IQ	-	.83**	.76**	.68**	.73**	.65**	.30	.67**	.82**	.68**	.32	.80**	.67**	.59**	.54*
K-ABC															
2. Mental Processing Composite	-	-	.95**	.87**	.78**	.87**	.57	.83**	.81**	.85**	.37	.87**	.83	.70**	.62**
3. Sequential Processing		-	.73**	.80**	.91**	.71**	.70**	.81**	.82**	.07	.85**	.84**	.68**	.61**	
4. Simultaneous Processing			-	.57*	.70**	.37	.86**	.65*	.77**	.56	.75**	.66**	.55*	.44	
Sequential Subtests															
5. Hand Movements				-	.55*	.58*	.67**	.86**	.66**	.02	.78**	.75**	.66**	.44	
6. Number Recall					-	.47	.70**	.74**	.80**	.13	.79**	.76**	.56*	.54*	
7. Word Order						-	.77**	.38	.44	.03	.34	.66**	.29	-.01	
Simultaneous Subtests															
8. Magic Window							-	.60*	.66**	.24	.70**	.69**	.46	.34	
9. Face Recognition								-	.70**	.03	.75**	.69**	.64*	.59*	
10. Gestalt Closure									-	.43	.69**	.68**	.74**	.65**	
11. Triangles										-	.27	.08	.15	.23	
Achievement Subtests															
12. Expressive Vocabulary											-	.83**	.76**	.60	
13. Faces and Places												-	.79**	.58*	
14. Arithmetic													-	.69**	
15. Riddles														-	

* $p < .05$
** $p < .01$